



Excel Automatic Locking Scaffold



INEEL

Technical Demonstration Summary Sheet AUTOMATIC LOCKING SCAFFOLD SYSTEM

THE NEED

Decontamination and Decommissioning (D&D) and maintenance operations have a need for scaffolding that can be assembled and disassembled safer and faster, reduce worker exposure, and minimize cost. Presently, tube and clamp type scaffold is used at the Idaho National Engineering and Environmental Laboratory (INEEL) and other Department of Energy (DOE) facilities. While tube and clamp scaffold performs well, it is labor intensive to assemble and disassemble.

THE TECHNOLOGY

The Excel Automatic Locking Scaffold is a positive locking system scaffold designed for quick assembly and disassembly in the field. The scaffold uses trigger release horizontal bearers which can be attached to vertical legs without the use of hand tools (see figure below). This reduces the need for tedious, repetitive nut and bolt tightening associated with tube and clamp scaffold systems. The following quick-connect attachments offer increased safety and utility to the scaffold: swing gates, floor hatches, ladders, trusses, cantilevers, lifting devices and trolley systems. The Excel design dramatically lowers total labor-hours and the associated costs for scaffolding work on D&D and maintenance projects. Like tube and clamp, Excel scaffold can be assembled for light, medium, and heavy-duty use per Occupational Safety and Health Act (OSHA) requirements. However, the Excel scaffolding system is the only scaffold designed, tested and qualified to meet requirements for fall protection as an anchorage point for worker tie off. Excel is also the only scaffold to pass a seismic shake test according to Institute of Electrical and Electronics seismic test standards at the Wyle Laboratory in Huntsville, Alabama.

THE DEMONSTRATION

The Excel Automatic Scaffold System was demonstrated in February through April of 1999 at the INEEL. The demonstration took place in the Security Training Facility, formerly the Experimental Organic Cooled Reactor, where tube and clamp was compared with the Excel scaffold during a D&D asbestos removal project. Twelve towers were assembled with the working platforms at 10-13 feet, six towers using tube and clamp scaffold and six using Excel scaffold. Some of the towers were assembled in areas with little or no obstructions while others were assembled in rooms where there was an abundance of pipes and equipment obstructing the assembly. One tower of each type was set up and video taped in the same location to validate the results observed in different locations.

THE RESULTS

The Excel Automatic Locking Scaffold System was simpler for INEEL craft personnel to use. A minimal amount of time was needed to become familiar with the scaffold. In an unobstructed area, it took two craft support using the Excel Scaffold only 45 minutes to assemble a 7'x5' (base) tower with a working platform at 12'. Using tube and clamp, it took the same two craft 2 hours to complete the equivalent tower. Two craft workers disassembled the Excel scaffold in only 15 minutes while it took 45 minutes with the tube and clamp scaffold. The net result was a 63 % reduction in assembly and 67 % reduction in disassembly times. This was typical of scaffold assembly and disassembly in open to moderately obstructed areas. It should be noted that the craft support in this demonstration were first time users of Excel scaffolding, and it is expected that erection and takedown time will decrease with experience. The Excel scaffolding has now replaced tube and clamp scaffolding as baseline for D&D operations at INEEL.

BENEFITS

- Reduce number of parts by 40%-45%
- 60%-70% reduction in labor costs due to quicker assembly
- 60%-70% ALARA dose reduction
- Excel scaffold meets year 2000 OSHA handrail requirements

CONTACTS

- Chelsea Hubbard, Project Manager, U.S. DOE, Idaho Operations Office, (208) 526-0645
- Brad Frazee, Program Manager, INEEL, (208) 526-3775
- Steve Bossart, U.S. DOE, Federal Energy Technology Center, DDFA (304) 285-4643
- Dick Meserve, Project Manager, INEEL, (208) 526-1834
- Neal Yancey, Test Engineer, INEEL, (208) 526-5157
- James E. Elkins, General Manager, Bartlett Services Inc., Plymouth, MA, (800) 225-0385



Trigger Mechanism for Excel Scaffold



AUTOMATIC LOCKING SCAFFOLD SYSTEM

<http://id.inel.gov/lsddp>